

April 22, 1997

Ms. Dolly Potter  
Environmental Manager  
Solvay Minerals, Inc.  
P.O. Box 1167  
Green River, WY 82935

Subject: Dispersion Modeling  
Exhibits

Dear Dolly:

Enclosed please find the dispersion modeling exhibits for the Mine Expansion project. We have plotted an isopleth of concentration for both the 24 hour and the annual particulate concentrations. I have also enclosed an exhibit that shows the location of the project in relation to the other major sources in the region. This does not present modeling results, but I thought you may want to use it to demonstrate the relative distance to the other sources beyond the Significant Impact Level (SIL). The proposed project reaches the SIL at the edge of the 11x17 exhibit, which would be a very small circle on the 8 1/2x11 exhibit.

Please be aware that we have not assigned exhibit numbers to these exhibits and may not have referred to them in the text.

Sincerely,



David Gaige, P. E.  
Air Program Manager

CDG:cdg

Enclosures

## SECTION SIX - RESULTS

## 6.1 - IMPACTS DUE TO EXPANSION

To: <u>Douglas Potter</u>	From: <u>Jeff YUHAS</u>
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As part of the modeling analysis, just those impacts from the proposed are compared with deMinimis monitoring levels and significant impacts levels (SILs). Impacts greater than the deMinimis monitoring levels indicate the need for preconstruction monitoring data to be collected (or a reasonable substitute to be available.) If impacts are shown to be above the SILs then a cumulative impact analysis is required to demonstrate compliance with the NAAQS, WAAQS, and PSD increment.

Table 6-1 presents the modeling results for impacts due to emissions from the facility expansion. Maximum impacts are shown in this table.

*for each averaging period*

Table 6-1

## Maximum Impacts from Emissions due to the Facility Expansion

Pollutant	Averaging Period	Year	Modeled Impacts ( $\mu\text{g}/\text{m}^3$ )	Significant Impact Level ( $\mu\text{g}/\text{m}^3$ )	DeMinimis Monitoring Level ( $\mu\text{g}/\text{m}^3$ )
PM10	24-hour	1987	29.0	5	10
		1988	38.1	5	10
		1989	31.9	5	10
		1990	35.8	5	10
		1991	34.5	5	10
	Annual	1987	8.2	1	
		1988	9.0	1	
		1989	8.7	1	
		1990	7.9	1	
		1991	9.3	1	
CO	1-hour	1987	847	2000	
		1988	886	2000	
		1989	970	2000	
		1990	820	2000	
		1991	795	2000	
	8-hour	1987	193	500	575
		1988	268	500	575
		1989	236	500	575
		1990	244	500	575
		1991	259	500	575
NOx	Annual	1987		1	14
		1988		1	14
		1989		1	14
		1990		1	14
		1991		1	14

Modeled CO impacts, due to the expansion, are below both the SIL's and the deMinimis monitoring levels. Therefore, further analyses are required for CO.

As can be seen, with the exception of PM<sub>10</sub>, all impacts for all other pollutants are below the significant impact levels and deMinimis monitoring levels.

Modeled PM<sub>10</sub> impacts exceed both the SIL and deMinimis levels.

The preconstruction monitoring requirement for PM<sub>10</sub> will be met by using the existing PM<sub>10</sub> monitoring network at the Solvay facility.

AAQS and PSD increment compliance is demonstrated below.

## 6.2 AAQS Compliance Assessment

Those pollutants which show impacts in excess of the SILs are included in a cumulative AAQS compliance demonstration. As discussed in Section 5, modeled high-second high impacts for the entire Solvay facility (existing and expansion sources) are combined with monitored background levels for comparison with the NAAQS and the WAAQS. Only PM<sub>10</sub> impacts were required to be included in this analysis. The results of this analysis are shown in Table 6.2.

TABLE 6.2 - NAAQS/WAAQS Compliance Demonstration

Pollutant	Averaging Period	Year	Solvay Impact (HSH) (µg/m <sup>3</sup> )	Monitored Impact (µg/m <sup>3</sup> )	Cumulative Impact (µg/m <sup>3</sup> )	AAQS (µg/m <sup>3</sup> )
PM <sub>10</sub>	24-hour	1987	25.9	34	59.9	150
		1988	29.6	34	63.6	150
		1989	28.6	34	62.6	150
		1990	29.4	34	63.4	150
		1991	28.2	34	62.2	150
	Annual	1987	8.2	10	18.2	50
		1988	9.0	10	19.0	50
		1989	8.7	10	18.7	50
		1990	7.9	10	17.9	50
		1991	9.3	10	19.3	50

## 6.3 PSD Increment Analysis

Those pollutants with PSD Increments that have modeled impacts that exceed the SILs (list them here) are included the PSD Increment Analysis. The increment analysis includes all sources permitted after the PSD baseline was triggered. This includes all of the Solvay facility. The results of this analysis are shown in Table 6.3.

TABLE 6.3 - Class I PSD Increment Analysis

Pollutant	Averaging Period	Year	Solvay Impact (HSH) ( $\mu\text{g}/\text{m}^3$ )	PSD Class II Increment ( $\mu\text{g}/\text{m}^3$ )
PM10	24-hour	1987	25.9	30
		1988	29.6	30
		1989	28.6	30
		1990	29.4	30
		1991	28.2	30
	Annual	1987	8.2	17
		1988	9.0	17
		1989	8.7	17
		1990	7.7	17
		1991	9.3	17

#### 6.4 HAPS

1-hour, 8-hour, 24-hour, and annual impacts for all hazardous air pollutant (HAP) emissions from the Solvay facility are shown in Table 6.4. These results are compared with the highest and lowest allowable ambient levels (AALs) presented in Section 5. As can be seen .....

TABLE 6-4 HAPS

#### 6.5 Plume Visibility

#### 6.6 Regional Haze

#### 6.7 Acid Deposition

A screening level assessment of acid deposition impact is typically performed using a technique presented by Fox (1983). This technique quantitatively estimates the change in pH on a sensitive water body (i.e., mountain lake) by incorporating predicted ambient concentrations of  $\text{SO}_2$  and  $\text{NO}_2$ . In addition, the conversion of predicted  $\text{NO}_2$  concentrations from the Solvay facility to applicable nitrate deposition values for use in the Fox technique was performed according to the procedures present on page 5-6 of the previously cited IWAQM document. Since  $\text{SO}_2$  emissions from the Solvay facility will be minimal, evaluating impacts from resulting sulfate deposition is not necessary. The predicted  $\text{NO}_2$  impacts from the

COMING SOON!